

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An apparatus to mechanically reinforce a cylindrical shaped hollow thin wall thermoplastic storage vessel having an open end with at least one wrap of continuous reinforcement fiber employing a thermoplastic resin binder, said fiber reinforcement having been helically wrapped about the outer surface in an unbonded condition, which comprises:

5 (a) physical support means disposed at the vessel ends to rotate the fiber wrapped storage vessel when suspended in the ambient atmosphere,

10 (b) external heating means to thermally bond the fiber reinforcement to the outer surface of said suspended storage vessel while rotating in the ambient atmosphere,

15 (c) external gaseous means to internally pressurize the hollow inner cavity of the suspended rotating storage vessel while thermal bonding of the fiber reinforcement occurs in the ambient atmosphere,

20 (d) external liquid cooling means to contemporaneously cool the hollow inner cavity of the suspended rotating storage vessel while said thermal bonding of the fiber reinforcement occurs, and

(e) automated electrical control means in said apparatus enabling such fiber reinforcement

25 procedure to be carried out in a continuous sequential manner.

2. The apparatus of claim 1 wherein the automated electrical control means includes a preprogrammed controller.

3. The apparatus of claim 2 wherein the preprogrammed controller comprises a software programmed computer.

4. The apparatus of claim 1 wherein the reinforcement fiber is selected from the group consisting of ceramics, metals, carbon, glass compositions and organic polymers.

5. The apparatus of claim 1 wherein the fiber reinforcement includes fiber wrapped in the hoop direction.

6. The apparatus of claim 1 wherein multiple wraps of the fiber reinforcement are employed.

7. The apparatus of claim 1 wherein internal pressurization of the fiber reinforced storage vessel is not discontinued until said storage vessel has cooled.

8. The apparatus of claim 7 wherein removal of the liquid coolant precedes discontinuation of the internal vessel pressurization.

9. The apparatus of claim 8 wherein removal of the liquid coolant is conducted with vessel outlet drain means.

10. The apparatus of claim 1 wherein a support member disposed at the open end of the suspended storage vessel includes rotary coupler means admitting both gaseous and liquid mediums to the hollow cavity of the storage vessel.

11. The apparatus of claim 1 wherein gas fired burner means are employed to thermally bond the fiber reinforcement.

12. The apparatus of claim 1 wherein the physical support means further includes a motorized variable speed drive mechanism.